SIERRA COLLEGE OBSERVATIONAL ASTRONOMY LABORATORY EXERCISE		
NUMBER III.C. **TITLE: The Moon**		
DATE- **DAY-** **LOCATION**	**PRINT NAME/S AND INITIAL BELOW:**	**GROUP**

DESCRIPTION:

The moon is our nearest celestial neighbor and the easiest to observe with a small telescope. A variety of lunar features are easily seen at different phases of the moon. The craters, cracks, and mountains are most prominent during early waxing or late waning phases when shadows emphasize the moon's rugged contour. During mid gibbous and full phases, the maria ('seas') and rays are best seen. This exercise will introduce an observer to some of the better known lunar surface features to view through a small telescope. It will also present techniques for measuring photographs to determine the size of surface features.

OBJECTIVE:

- Observe the moon with small telescope if weather permits.
- Determine the 'phase-age' of the moon using a computer or lunar calendar.
- Identify a variety of lunar surface features.
- Measure the height of a mountain on the moon and the diameter of several craters.
- Use the 'Bluebook' moon chart (p. F19) for identification of moon features.

TELESCOPE OBSERVATIONS:

Set up the Meade Telescope using the 40mm eyepiece and higher power eyepieces to observe greater detail.

1. Sketch and describe the location of five different surface features. Use the map in your Bluebook to verify their identity. Also check off the feature in the log section. **Indicate Eyepiece and Magnification in each sketch box.**

1.	2.	3.	4.	5.

2. Try different filters and decide which enhances the viewing of the moon the most. This may differ for various phases of the moon.
NOTE – Viewing the full or near full moon with a Meade may hurt your eyes. Use filtration or reduce telescope aperture.
Comment on observations below:

PHOTOGRAPHIC MEASUREMENTS: (Indoors)

Measure the radius of the photo on the next page in millimeters. Determine the 'PLATE SCALE' of the lunar image (km/mm).

PHYSICAL RADIUS OF THE MOON = 1738 km.

MEASURED RADIUS OF THE MOON PHOTO = _____ mm

PLATE SCALE = PHYSICAL RADIUS OF MOON/MEASURED RADIUS OF PHOTO.
This is a very important number. Make careful measurements since the accuracy of the rest of the exercise will depend upon it.

_____ km/mm

1. Using your Bluebook moon map, identify craters 'B' and 'C' on the adjacent photo.

   B = C =

   Measure the image diameter of both craters and then determine the physical or actual diameters (in km) of each. Calculate the % discrepancy after instructor gives the published values for each.

   Show calculations and results below:

2. Determine the height of the mountain peak, Piton. This can be done by using the formula below, where **H** is the height of the mountain, **L** is the length of the shadow cast by the mountain, **D** is the distance of the mountain peak to the terminator, and **R** is the radius of the moon photo (as marked).

$$H = \frac{L \times D \times (\text{Plate Scale})}{R}$$

Show all measurements and calculations below, including discrepancy. Instructor will give published altitude of Piton.

QUESTIONS:

1. What crater is the ray marked 'A' in the photo associated with?

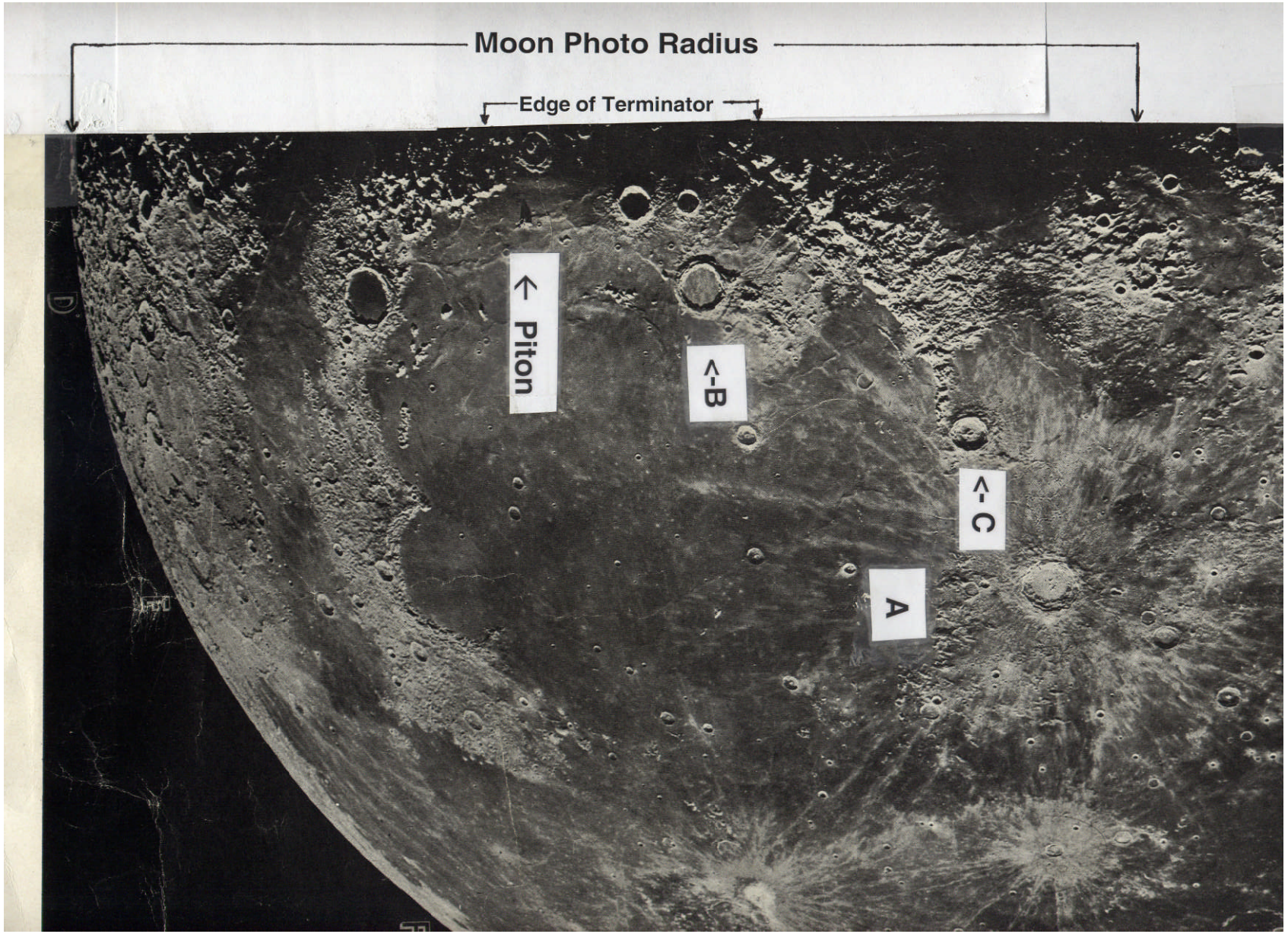
2. What is the phase age of the moon when the moon photo was taken?

3. What is the phase and phase age of the moon on April 15 of this year?

4. Give several reasons for discrepancies in measurements off photo.

a. crater diameter

b. mountain height


Moon Photo Radius
Edge of Terminator
↑ Piton
<-B
<-C
A